

WHAT IS CLAIMED IS:

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1. A solid-state image pickup apparatus comprising:  
an image pickup section comprising:

a color separating section including color filters assigned to three primary colors R (red), G (green) and B (blue) for separating colors of light incident from a desired scene, the color filters assigned to the color G being arranged in stripes;

a plurality of photosensitive cells arranged bidimensionally in one-to-one correspondence to said color filters each for transforming light output from a particular color filter to a corresponding signal charge;

a plurality of vertical transfer paths each comprising transfer elements arranged in a vertical direction for vertically transferring signal charges fed from adjoining ones of said plurality of photosensitive cells;

a horizontal transfer path perpendicular to said plurality of vertical transfer paths and comprising transfer elements arranged in a horizontal direction for transferring the signal charges fed from said plurality of vertical transfer paths;

signal reading circuitry for shifting the signal charges from said plurality of photosensitive cells to said plurality of vertical transfer paths; and

charge sweeping circuitry for sweeping out needless ones of the signal charges stored in said plurality of photosensitive cells;

a mode selecting section for selecting, when an operation for reading the signal charges out of said image pickup section is represented by a mode, either one of an all pixel read mode for reading the signal charges from all of said plurality of photosensitive cells and a particular pixel read mode for reading only the signal charges representative of the color G;

a drive signal generating section for feeding horizontal and vertical drive signals to said image pickup section, and providing said horizontal drive signals with a period shorter

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in said particular pixel read mode than in said all pixel read mode; and

a controller for controlling said drive signal generating section in a particular manner in each of said all pixel read mode and said particular pixel read mode.

1            2. An apparatus in accordance with claim 1, wherein said  
color separating section has any one of a G stripe pattern,  
a G stripe, RB checker pattern and a G stripe, RB full checker  
5            pattern in which the color G is arranged in stripes and a full  
checker pattern in which the color G is arranged in a square  
lattice while the colors R and B each are diagonally arranged  
at opposite sides of the color G.

1            3. An apparatus in accordance with claim 1, wherein said  
horizontal drive signals output from said drive signal generating  
section comprise:

first horizontal drive signals different in phase from  
each other and assigned to said all pixel read mode and equal  
in number to electrodes to which said drive signals are fed  
in said all pixel read mode; and

second horizontal drive signals different in phase from  
each other and assigned to said particular pixel read mode and  
two times greater in number than the electrodes used in said  
all pixel read mode.

4. An apparatus in accordance with claim 3, wherein said  
second horizontal drive signals have a period which is one half  
of a period of said first horizontal drive signals.

5. A signal reading method for a solid-state image pickup  
apparatus including an image pickup section including a color  
separating section having color filters assigned to three primary  
colors R, G and B for separating colors of light incident from

5 a desired scene, the color filters assigned to the color G being arranged in stripes, a plurality of photosensitive cells arranged bidimensionally in one-to-one correspondence to said color filters each for transforming light output from a particular color filter to a corresponding signal charge, and charge  
10 sweeping circuitry for sweeping out needless ones of signal charges stored in said plurality of photosensitive cells, said image pickup section transferring the signal charges of said plurality of photosensitive cells in a vertical direction and then in a horizontal direction; said signal reading method comprising the steps of:

(a) selecting, when an operation for reading the signal charges out of said image pickup section is represented by a mode, either one of an all pixel read mode for reading the signal charges from all of said plurality of photosensitive cells and  
20 a particular pixel read mode for reading only the signal charges representative of the color G;

(b) generating drive signals for driving said image pickup section in accordance with said all pixel read mode or said particular pixel read mode selected;

25 (c) storing, in said particular pixel read mode, the signal charges derived from the color G in response to said drive signals while sweeping out the signal charges derived from the colors R and B;

(d) effecting a field shift of only the signal charges  
30 stored;

(e) vertically transferring the signal charges derived from the color G and subjected to the field shift; and

(f) horizontally transferring the signal charges vertically transferred at a period shorter than a period of time necessary  
35 for the signal charges to be read out in said all pixel read mode.

1 6. A method in accordance with claim 5, wherein step (b)

comprises:

5 (g) generating first drive signals for storing, in said particular pixel read mode, the signal charges derived from the color G while sweeping out the signal charges derived from the colors R and B;

(h) generating second drive signals for effecting the field shift;

10 (i) generating third drive signals for vertically transferring the signal charges subjected to the field shift; and

(j) generating drive signals for horizontally transferring the signal charges vertically transferred at a period shorter than a period of time necessary for the signal charges to be  
15 read out in said all pixel read mode.

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